

Investigation of the Methods of Ring Synthesis of
A-Tetracyclines - Method of Introducing the N,N-Di-
methylglycine Residue Into the Cyclohexanone Ring

SOV/20-128-4-30/65

these problems. A model synthesis and some transformations of the simplest compound of type (IVb) - the ester of threo-2-keto-cyclo-hexyl-N,N-dimethyl glycine (XIIa) - are described. The above-mentioned introduction into the cyclohexanone ring has to be carried out under such conditions and by such methods as are also applicable to the case of tricyclic oxydiketones (I). This method is described. The authors ascribed a threo-configuration to the dimethyl-amino-keto ester obtained. This was also confirmed by further transformations (XVIII) and (XIVa). Table 1 shows the compounds obtained, their constants, as well as the composition found analytically and by computation (VIa - XXII). The dimethyl-amino-keto ester (XIIa) synthesized by the authors was also investigated with respect to the introduction of an ethynyl residue into the molecule. This is necessary for building up the "lower" part of the A-ring of tetracyclines by the method developed previously (Ref 2). It was shown that (XIIa) easily reacts with $\text{HC} \equiv \text{CNa}$ in liquid NH_3 at -50° to form an acetylene-oxy ester in a 60% yield. The latter is supposed to

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have a spatial structure similar to (XIIIb). It shows a pronounced tendency towards lactonization to (IX), and is - in this respect - similar to the threo-transamino-oxy esters (XVI). By the effect of $(\text{AcO})_2\text{Hg}$ in EtOH at 20° , it is epimerized to an erythro isomer (XVII). In contrast to the initial compound, the latter shows no tendency to lactonize, and is not changed by distillation even at 100° . There are 1 table and 6 references, 2 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR). Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR (Institute of Biological and Medical Chemistry of the Academy of Medical Sciences, USSR)

SUBMITTED: June 27, 1959
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5.5610

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EOV/79-50-2-56/78

AUTHORS: Shemyakin, M. M., Arbuzov, Yu., Kolosov, M. N., Shamen-
shcheyn, G. A., Onoprienko, V. V., Konnova, Yu. V.

TITLE: Investigation in the Field of Tetracyclenes. VI. Carboxy-
amidation of Dimedone With Isocyanates

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, No 2, pp 542-545
(USSR)

ABSTRACT: Carboxyamidation of dimedone with carbonic acid derivatives
was done by one of the following variants. There are 5
references, 3 Soviet, 1 German, 1 U.S. The U.S. reference
is: R. L. Frank, H. K. Hall, J. Am. Chem. Soc., 72, 1645
(1950).

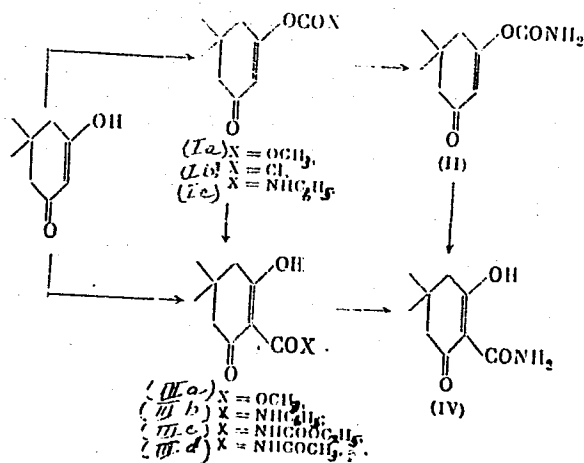
ASSOCIATION: Institute of Organic Chemistry, Academy of Sciences, USSR
(Institut organicheskoy khimii Akademii nauk SSSR)

SUBMITTED: February 25, 1959
Card 1/3

Investigation in the Field of Tetracyclenes.
VI. Carboxyamidation of Dimedone With Iso-
cyanates

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SOV/79-30-2-36/78



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Investigation in the Field of Tetracyclenes.
VI. Carboxyamidation of Dimedone With Iso-
cyanates

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Some Properties of Obtained Products

Nr	Starting material	Obtained product	Yield in %	bp/mm pr	n _D ²⁰
1	Na-enolate of dimedone (I) + dry ether + chloroformic acid	Ia	76	120-122/14	1.4784
2	I + phosgene	3-chloro-5,5-dime- -thylcyclohex-2-en- -1-one	79	78/7	1.4953
3	I + phenyl isocyanate + dimethylformamide	IIIb	75	mp 92-93	
4	I + carbethoxy cyanate	IIIc	94	mp 65-66	
5	IIId + NH ₄ OH + CH ₃ OH	IV	97		

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SOV/79-30-2-37/78

AUTHORS: Shemyakin, M. M., Kolosov, M. N., Arbuzov, Yu. A.,
Onoprienko, V. V., Sieh Yü-yüan

TITLE: Investigation in the Field of Tetracyclines. VII.
Study of the Synthetic Routs to the A Ring of
Tetracyclines

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2,
pp 545-556 (USSR)

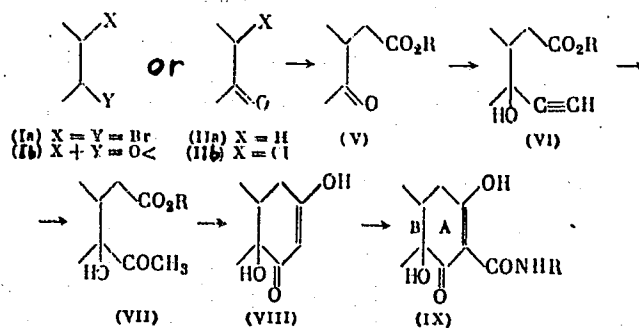
ABSTRACT: Synthesis of compound IX can be divided into three
parts: (1) construction of the upper parts of the
A ring (Ia (Ib) or IIa (IIb) \rightarrow (V)) ; (2) construction
of its lower parts (V \rightarrow VI \rightarrow VII); and cyclization with
subsequent introduction of carboxamide group (VII \rightarrow
VIII \rightarrow IX).

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Investigation in the Field of Tetracyclines.
VII. Study of the Synthetic Routes to the A
Ring of Tetracyclines

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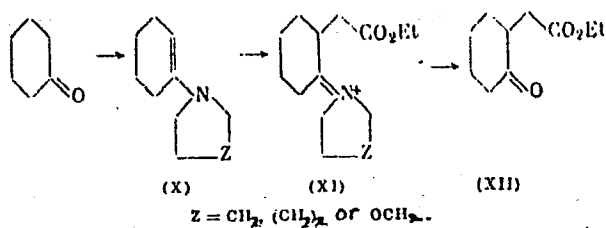


The following compounds can be used for construction of the upper ring: dibromides (Ia); epoxides (Ib); ketones (IIa); and haloketones (IIb). The third way (IIa) is simpler.

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Investigation in the Field of Tetracyclines.
VII. Study of the Synthetic Routs to the A
Ring of Tetracyclines

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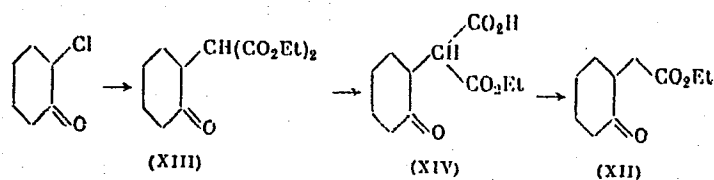


The fourth way (IIB) puts the carbomethoxy group exclusively in a certain position of cyclohexane ring.

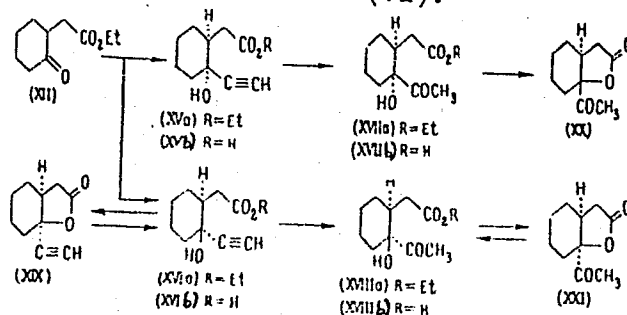
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Investigation in the Field of Tetracyclines.
VII. Study of the Synthetic Routs to the A
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Construction of lower parts of the A ring includes ethynylation of V and hydration of the triple bond of the obtained ethynyl carbinol (VI).



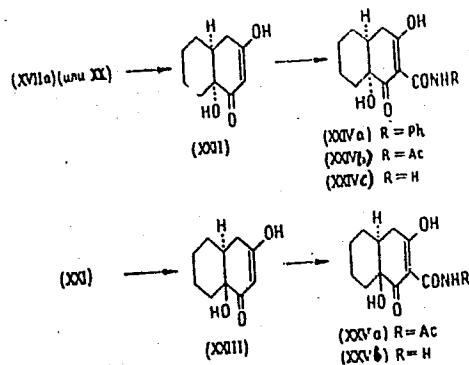
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Investigation in the Field of Tetracyclines:
VII. Study of the Synthetic Routs to the A
Ring of Tetracyclines

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Na-enolates of hydroxydiketones react in dimethyl-
formamide with excess of the corresponding isocyanate
(carboxyamidation of hydroxydiketones XXII and
XXIII).



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Investigation in the Field of Tetracyclines.
VII. Study of the Synthetic Routs to the A
Ring of Tetracyclines

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SOV/79-30-2-37/78

Some Properties of Obtained Products

Nr	Starting Material	Obtained Product	Yield (%)	bp/mm pr	$n_D^{(x)}$
1	Cyclohexanone + secondary amine* toluenesulfonic acid + benzene	X	-	-	-
2	X + bromoacetic ester XII + hydrolysis with aqueous methanol		-	121-122°/7	x = 18 1.4592
3	Sodium malonic ester XIII + 2-chlorocyclohexanone + malonic ester + benzene		70	151-153°/3	x = 20 1.4595

* = piperidine, pyrrolidine, morpholine.

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Investigation in the Field of Tetracyclines.
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Nr	Starting Material	Obtained Product	Yield (%)	bp/mm pr	n_D (x)
4	Saturated HC≡CH solution in liquid ammonia + Na + XII + abs. ether + NH ₄ Cl	mixture of XV-a and XVI-a	85	83-84°/0.02	x = 18 1.4831
5	Mixture of XVa and XVI-a are hydrolyzed with NaOH	XV-b + mother liquid	71	mp 101-2°	-
6	the above mother liquid (5) + 0.1N H ₂ SO ₄	XIX	24	63-64°/0.04	x = 21 1.4926
7	XIX is hydrolyzed with 0.1 N NaOH, acidified with 1 N H ₂ SO ₄ , and extracted with CHCl ₃	XVI-b	-	-	-

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Nr	Starting Material	Obtained Product	Yield (%)	bp/mm pr	$n_D^{(x)}$
8	Mixture of XVa and XVIa + anhydrous alcohol + mercuric acetate	mixture of XVII-a and XVIII-a	66	90-92°/0.03	x = 17 1.4735
9	Mixture of XVa and XVIa + mercuric salt of p-toluenesulfon- amide + alcohol	mixture of XVII-a and XVIII-a	41	-	-
10	Mixture of XVIIa and XVIIIa + alcohol + hydrolysis with 0.4 N NaOH	XVII-b + mother liquid	72	mp 115-6°	-
11	The above mother liquid (10) is boiled with 1 N H ₂ SO ₄	XXI	24	72-73°/0.03	-

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Investigation in the Field of Tetracyclines.
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Nr	Starting Material	Obtained Product	Yield (%)	bp/mm pr	$n_D^{(x)}$
12	XXI is hydrolyzed with 0.1 N NaOH	XVIII-b	96	mp 98-100°	-
13	XVII-b is heated at 150°/15 mm	XX	91	70-71°/0.12	x = 22 1.4828
14	XVIII-b + Na ₂ CO ₃ + AgNO ₃ + ethyl iodide	XVII-a	90	91-92°/0.03	x = 19 1.4737
15	XVII-b or XVIII-b is distilled at 130°/0.07	XVIII-b trans in the form of lactone	88	-	-

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Investigation in the Field of Tetracyclines,
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Nr	Starting Material	Obtained Product	Yield (%)	bp/mm pr	$n_D^{(x)}$
16	XVII-b or XXVIII-b + 0.1 N H_2SO_4 after 2 hours	XVIII-b in the form of lactone	100	-	-
17	XVII-a + 0.5 N sodium ethoxide in alcohol	XXII (cis)	95	mp 181-182°	-
18	XXII (cis) + di- methylformamide + phenylisocyanate	XXIV-a	46	-	-
19	XXIV-b + NH_3 + CH_3OH	XXIV-b (cis)	75	mp 153-154°	-
20	XXV-a + ammonolyse	XXV-b (trans)	65	mp 160-161°	-

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Investigation in the Field of Tetracyclines.
VII. Study of the Synthetic Routs to the A
Ring of Tetracyclines

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SOV/79-30-2-37/78

There are 2 tables; 22 references; 4 Soviet, 7 U.S.,
2 French, 4 U.K., 2 German, 2 Swedish, 1 Japanese.
The 5 most recent U.S. references are: A. P. Doershuk,
B. A. Bittle, J. R. D. McCormic, J. Am. Chem. Soc.,
77, 4687 (1955); M. S. Newman, C. A. Vander Werf, *ibid*,
67, 233 (1945); C. Stephens, K. Murai, H. Rennhard,
L. Conover, K. Brunungs, *ibid*, 80, 5324 (1958); A. Segre,
R. Viterbo, G. Parisi, *ibid*, 79, 3503 (1957); G. Stork,
R. Terrell, J. Szmuszkowicz, *ibid*, 76, 2029 (1954).

ASSOCIATION: Institute of Organic Chemistry, Academy of Sciences,
USSR, and Institute of Biological and Medical Chemistry,
Academy of Medical Sciences, USSR (Institut organicheskoy
khimii Akademii nauk SSSR i Institut biologicheskoy i
meditsinskoy khimii Akademii meditsinskikh nauk SSSR)

SUBMITTED: February 25, 1959

Card 11/11

SHEMYAKIN, M.M., akademik; ARBUZOV, Yu.A.; KOLOSOV, M.N.; OVCHINNIKOV, Yu.A.

Study of the synthetic paths used in building the ring system of
BA tetracyclines. Dokl.AN SSSR 133 no.5:1121-1124 Ag '60.
(MIRA 13:8)

1. Institut khimii prirodnkh soyedineniy Akademii nauk SSSR i
Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Tetracycline)

ARBUZOV, Yu.A.; KOLOSOV, M.N.; OVCHINNIKOV, Yu.A.; SHEMYAKIN, M.M.

New reaction of halo lactones. Izv. AN SSSR, Otd. khim. nauk no.2:
377 F '61. (MIRA 14:2)

1. Institut khimii prirodnnykh soyedineniy AN SSSR.
(Lactones)

ARBUZOV, Yu.A.; BERLIN, Yu.A.; VOLKOV, Yu.P.; KOLOSOV, M.N.;
OVCHINNIKOV, Yu.A.; SE YUY-YUAN' [Hsieh Yü-yuan];
TAO CHZHEN-E [T'ao Chêng-ê]; SHEMYAKIN, M.M.

Study of the ways of synthesizing tetracyclines. Antibiotiki
6 no.7:585-594 JI '61. (MIRA 15:6)

1. Institut khimii prirodnykh soedineniy AN SSSR.
(TETRACYCLINE)

ARBUZOV, Yu.A.; KIRYUSHKIN, A.A.; KOLOSOV, M.N.; OVCHINNIKOV, Yu.A.; SHEMYAKIN, M.M., akademik

Ways of constructing a ring system of BA tetracyclines. Synthesis of esters of substituted 2-oxocyclohexylacetic acids. Dokl. AN SSSR 137 no.5:1106-1109 Ap '61. (MIRA 14:4)

1. Institut khimii prirodnkh soyedineniy AN SSSR i Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Tetracycline) (Cyclohexanecarboxylic acid)

ARBUZOV, Yu.A.; KLIMOV, Ye.M.; KLIMOVA, Ye.I.

Diene synthesis with glyoxylic acid esters. Dokl. AN SSSR
142 no.2:341-343 Ja '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom A.Ye.Arbuzovym.
(Olefins)
(Glyoxylic acid)

ARBUZOV, Yu.A.; VOLKOV, Yu.P.; KOLOSOV, M.N.

Structural and steric directivity of the reaction involved in the reduction of 1,4,4a,9a-tetrahydroanthraquinones by aluminum hydride. Dokl.AN SSSR 144 no.3:555-558 My '62. (MIRA 15:5)

1. Institut khimii prirodnikh soyedineniy AN SSSR.
(Anthraquinone) (Aluminum hydrides) (Stereochemistry)

ARBUZOV, Yu.A.; LYSANCHUK, L.K.

Reactions of diene hydrocarbons with nitroso compounds. Addition of isoprene and 2-methoxy-1,3-butadiene to nitrosobenzene. Dokl. AN SSSR 145 no.2:319-322 J1 '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
Predstavleno akademikom A.N.Nesmeyanovym.
(Isoprene) (Benzene) (Butadiene)

ARBUZOV, Yu.A.; KOROLEV, A.M.

Diene synthesis involving acetoxymethyl vinyl ketone.
Zhur.ob.khim. 32 no.11:3674-3676 N '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Ketone)
(Chemistry, Organic—Synthesis)

ARBUZOV, Yu.A.; KLIMOVA, Ye.I.

Condensation of glyoxylic acid esters with ketones.
Zhur.ob.khim. 32 no.11:3676-3681 N '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet imeni
M.V. Lomonosova.

(Glyoxylic acid)
(Ketones)

ARBUZOV, Yu.A.; KLIMOV, Ye.M.; KOROLEV, A.M.

Diene synthesis involving 1-methoxy-4-penten-3-one and
1,4-pentadien-3-one. Zhur.ob.khim. 32 no.11:3681-3687
N '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet imeni
M.V. Lomonosova.

(Pentenone) (Pentadienone)
(Chemistry, Organic—Synthesis)

ARBUZOV, Yu.A.; ONISHCHENKO, A.A.

Reaction of 1-chloro-1-nitrosocyclohexane with 1,3-butadiene.
Dokl. AN SSSR 146 no.5:1075-1077 0 '62.

(MIRA:15/10)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Predstavleno akademikom A.N. Nesmeyanovym.
(Cyclohexane) (Butadiene)

ARBUZOV, Yu.A.; BULATOVA, N.N.

Diene synthesis involving phenyl vinyl ketone. Zhur.ob.khim.
33 no.6:2045-2048 Je '63. (MIRA 16:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Ketone) (Unsaturated compounds) (Chemistry, Organic—Synthesis)

ARBUZOV, Yu.A.; BOLESOV, I.G.; BREGADZE, V.I. ; KOLOSOV, M.N.; SHEMYAKIN, M.
M.; EL'PERINA, Ye.A.

Tetracycline series. Report No.18: Synthesis of 2- and 3-substituted 9-keto-1,2,3,4, 4_a,9,9_a,10-octahydroanthracenes. Izv.AN SSSR. Ser.khim. no.2:310-319 F '64. (MIRA 17:3)

1. Institut khimii prirodnikh soyedineniy AN SSSR.

ARBUZOV, Yu.A.; BIEVICH, K.A.; BOLESOVA, I.N.; VOLKOV, Yu.P.;
KOLOSOV, M.N.; SHEMYAKIN, M.M.

Tetracyclines. Report No.19: Synthesis of 2- and 3-substituted
10-keto-9-hydroxy-1,2,3,4a,9,9a,10-octahydroanthracenes. Izv.
AN SSSR. Ser.khim. no.3:482-491 Mr '64. (MIRA 17:4)

1. Institut khimii prirodnikh soyedineniy AN SSSR.

ARBUZOV, Yu.A.

Diene synthesis with dienophiles containing heteroatoms. Usp.
Khim. 33 no.8:913-950 Ag '64. (MIRA 18:3)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ARBUZOV, Yu.A.; BOLESOV, I.G.; ZHURAV, A.L.; KOLOSOV, M.N.; OSANOVA, L.K.;
SEMYAKIN, M.M.

Study of tetracyclines. Report No.33: Synthesis of 8-chloro-5-methoxy-3,10-diketo-1,2,3,4,4 α ,9,9 α ,10-octahydroanthracene.
Izv. AN SSSR. Ser. khim. no.5:806-810 '65. (MIRA 18:5)

1. Institut khimii prirodnikh soedineniy AN SSSR.

ARBUZOV, Yu.A.

Diene synthesis with molecular oxygen. Usp. khim. 34 no.8:
1332-1367 Ag '65. (MIRA 18:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

ARBUZOV, Yu.N.; ARBUZOV, L.S.; GIDALEVICH, B.A ; POPOV, V.S.,
red.; NATSIK, P.T., red.; YAITSKIY, G.G., red.;
KOMENDANT, K.P., red.

[Building materials of Kherson Province; mineral raw
material base] Stroitel'nye materialy Khersonskoi ob-
lasti; mineral'no-syr'evaia baza. Kiev, Gosstroizdat
USSR, 1964. 102 p. (MIRA 17:9)

1. Dneprogeologiya, trust.

ARBUZOV, Yu.P.; Prinimali uchastiye: FRIDLYANDER, I.N.; EDEL'MAN, N.M.;
BUROVA, Ye.I.; SOLOV'YEVA, V.V.; STAROSTINA, Z.I.; GUBAREVA, Ye.A.

Properties of welded joints in AD31 and AD33 aluminum alloys.
Alium. splavy no.3:36-45 '64. (MIRA 17:6)

FRIDLYANDER, I.N.; ZAYTSEVA, N.I.; BUROVA, Ye.I.; ARBUZOV, Yu.P.

Weldable B92 aluminum alloy. Alum. splavy no. 3:76-79-164.
(MIRA 17:6)

ARBUZOV, Yu.P.; Primali uchastiye: FRIDLY'NDER, I.N.; ZAYTSEVA, N.I.;
BUROVA Ye.I.; SOLOV'YEVA, V.V.; ARTEM'YEVA, N.F.; ARTEM'YEVA,
M.S.

Properties of welded joints in the B92 aluminum alloy. Alium.
splavy no.3:80-91 '64.
(MIRA 17:6)

FRIDLYANDER, I.N.; ZAYTSEVA, N.I.; BUROVA, Ye.I.; ARBUZOV, Yn.P.;
Prinimali uchastiye: ARTEMOVA, M.S.; AGAPOVA, L.I.

Regularities of changes in mechanical and corrosive properties and the weldability of alloys in the system Al - Zn - Mg.
Alium. splavy no.3:51-65 '64. (MIRA 17:6)

Effect of various additions on the properties of alloys in the system Al - Zn - Mg. Ibid.:66-75 (MIRA 17:6)

ARBUZOV, Yu.P.; P.; Prinimali uchastiye: KONDRAT'YEVA, N.B.; SHTEYNINGER,
V.R.

Properties of welded joints in the AMg6 aluminum alloy.
Alum. splavy no.3:313-325 '64. (MIRA 17:6)

ACCESSION NR: AT4037647

S/2981/64/000/003/0051/0065

AUTHOR: Fridlyander, I. N.; Zaytseva, N. I.; Burova, Ye. I.; Arbuzov, Yu. P.

TITLE: Principles of variation in the weldability and mechanical and corrosion properties of Al-Zn-Mg alloys

SOURCE: *Alyuminiyevy*ye splavy**, no. 3, 1964. *Deformiruyemy*ye splavy** (Malleable alloys), 51-65

TOPIC TAGS: aluminum alloy, aluminum zinc magnesium alloy, alloy heat treatment, alloy mechanical property, alloy corrosion resistance, alloy weldability, manganese admixture, zinc, magnesium

ABSTRACT: A group of alloys with 1.5-6% Zn, 1.5-8% Mg and 0.6-1.0% Mn was tested for mechanical properties, corrosion resistance and weldability in relation to composition, heat treatment and aging procedure. Sheets (2 mm thick) were annealed for 2 hrs. at 400C and furnace cooled at 30°/hr. to 200C, then in free air, or water quenched from 440-460C and aged naturally for 1 month or artificially for 96 hrs. at 100C. Corrosion tests involved compositions with 2.5-6.0% Zn and 1.0-3.0% Mg, immersed for 3 months in 3% NaCl solution plus 0.1% H₂O₂ or exposed to corrosion in an industrial atmosphere. The tendency of welded joints to cracking was studied in relation to composition. The results are illustrated

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ACCESSION NR: AT4037647

graphically and led the authors to submit alloys with a total Zn plus Mg content of 7.0-8.0% (2.9-3.6% Zn, 3.9-4.6% Mg, Zn : Mg ~ 0.8 : 1) and 0.6-1.0% Mn for further testing and development. "M. S. Artemova and L. I. Agapova took part in the experimental part of the work." Orig. art. has 9 graphs and 4 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 002

OTHER: 001

Card 2/2

ACCESSION NR: AT4037671

S/2981/64/000/003/0313/0325

AUTHOR: Arbuzov, Yu. P.

TITLE: Properties of welded joints of magnalium AMg6

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 313-325

TOPIC TAGS: aluminum alloy, magnalium, alloy weldability, alloy AMg6, weld joint mechanical property, weld joint cracking, weld joint microstructure, alloy annealing, alloy cold hardening, auxiliary welding, alloy machine welding, alloy manual welding, weld joint structural strength

ABSTRACT: Samples (2 mm thick) which had been annealed and cold hardened (10-40%) were manually or machine welded (nonconsumable electrode, argon) and tested for mechanical properties, cracking tendency, fatigue limit, plasticity, microstructure, effect of hardening procedure and auxiliary welding. The structural strength of manually welded joints and its dependence on repetitive auxiliary welding was tested on tank models. Values of cracking coefficients were low (10-12%). The tensile strength of reinforced weld joints at 20 or 300C was at least 90% of that in the original material (36 and 17, 34 and 15 kg/mm², respectively). Cracks were absent irrespective of the level of cold hardening. Machine welding weakened hardened material, its properties becoming similar to those of annealed

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material. The structural strength of welding seams in the model tanks ranged from 24.5 to 31.5 kg/mm², failure along lengthwise seams occurring in each case at 70 to 100 atm. Auxiliary welding more than twice is not recommended. "N. B. Kondrat'yeva, V. R. Shteyninger, S. N. Shestakov and Mr. Valeyev also took part in various aspects of the work." x
Orig. art. has: 2 tables, 10 graphs, 5 illustrations.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

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ACCESSION NR: AT4037649

AUTHOR: Fridlyander, I. N.; Zaytseva, N. I.; Burova, Ye. I.;
Arbuzov, Yu. P.

S/2981/64/000/003/0076/0079

TITLE: The V92 weldable aluminum alloy
splavy* (Malleable alloys), 76-79

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964, Deformiruyemy*ye.
TOPIC TAGS: aluminum alloy, weldable aluminum alloy, heat
resistant alloy, V92 alloy, heat treatable alloy, wrought alloy,
alloy weldability, alloy corrosion, resistance alloy property

ABSTRACT: The V92 aluminum base alloy contains the following
principal components: Mg, 3.9—4.6%; Zn, 2.9—3.6%; Mn, 0.6—1.0%; and
Be, 0.0001—0.005%. The optimum combination of properties is
obtained at a Zn + Mg sum of 7—8% and a Zn:Mg ratio of 0.75.
The alloy is heat treatable: it is solution heat treated at 450—470C
and artificially aged at 60C for 24 hrs and then at 200C for 1—2 hr.

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58"

ACCESSION NR: AT4037649

The natural aging proceeds rather slowly and is not completed in 30 days. In 3 months of natural aging the tensile strength and yield strength increase by 2—3 kg/mm². The alloy is annealed at 320—350C for 2—3 hr with furnace cooling to 200C to room temperature. The annealed alloy has a tensile strength of 27—30 kg/mm², a yield strength of 13—17 kg/mm², and elongation of 18—22%. The tensile strength of the solution heat treated and artificially aged alloy is 43—48 kg/mm², yield strength 29—35 kg/mm², and elongation 18—22% at room temperature; 28 kg/mm², 22 kg/mm², and 25—30%, respectively, at 200C; and 9 kg/mm², 6 kg/mm², and 70%, respectively, at 300C. The tensile and yield strengths of naturally aged alloy are somewhat lower, but the difference becomes smaller with increasing temperature. The alloy can be extruded and cold formed. V92 alloy is welded satisfactorily by argon shielded arc welding; filler wire of the same alloy with 0.2—0.5% Zr and increased Mg and Zn content is recommended. No heat treatment is necessary after welding since the "critical cooling rate" of the alloy is rather low. The strength of welded joints is approximately 0.8 of that of the base metal. Corrosion resistance of V92 alloy is satisfactory. Orig. art. has: 5 tables.

Card 2/2

ACCESSION NR: AT4037650

S/2981/64/000/003/0080/0091

AUTHOR: Arbuzov, Yu. P.

TITLE: Properties of V92 aluminum alloy welds

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 80-91

TOPIC TAGS: V92 aluminum alloy, aluminum alloy, aluminum alloy welding, alloy weld property, weld corrosion, electrode wire composition, alloy weldability

ABSTRACT: Properties of welded joints in V92 aluminum alloy (3.75 to 4.40% Mg, 2.59—3.34% Zn, and 0.56—0.73% Mn) sheets 2 mm thick produced and heat treated under production conditions have been investigated. Specimens were welded by a manual TIG process. Best properties of the weld were obtained with filler wire containing 5.0% Mg, 4.0% Zn, 0.4—0.6% Mn, and 0.2% Zr. It was found that the susceptibility to formation of hot cracks depends on the chemical composition of the alloy and that the duration of natural aging

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ACCESSION NR: AT4037648

S/2981/64/000/003/C066/0075

AUTHOR: Fridlyander, I. N.; Zaytseva, N. I.; Burova, Ye. I.; Arbuzov, Yu. P.

TITLE: Effect of various additives on properties of alloys of the system Al-Zn-Mg

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 66-75

TOPIC TAGS: aluminum alloy, aluminum zinc magnesium alloy, alloying additive, alloy mechanical property, alloy corrosion resistance, alloy weldability, beryllium additive, zirconium additive, cerium additive, calcium additive, manganese additive, iron additive, silicon additive, titanium additive, copper additive

ABSTRACT: Admixtures of 0.002 - 0.3% Be, 0.05 - 0.3% Zr, 0.1 - 2.0% Ce and 0.2 - 0.8% Ca were analyzed for their effect on the properties of aluminum alloys containing 3% Zn, 3.7% Mg and 0.8% Mn. Other experiments involved admixtures of 0.6 - 1.0% Mn, 0.1 - 0.5% Fe, 0.1 - 0.3% Si, up to 0.2% Ti and 0.05 - 0.3% Cu to an aluminum alloy containing 2.7% Zn, 3.7% Mg and 0.002% Be (the

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effect of last four admixtures was verified on an alloy with 0.8% Mn). Mechanical tests used 2 mm sheet samples, either annealed (2 hours at 400C, cooled to 200C at 30°/hr. or slower), freshly hardened or hardened (water quenching from 445 ± 5C) and naturally (1 week- 3 months) or artificially (96 hrs., 100C) aged. Hardened and naturally aged welded sheet samples were tested for corrosion resistance one month after welding by intermittent immersion in a 3% NaCl solution over a period of three months. Other tests concerned weldability of the alloys. Results are mostly tabulated or plotted on graphs and indicate, in summary form, that addition of Zr, Be and Mn to these systems is useful, while the content of Cu, Fe and Si should be severely controlled. "M. S. Artemova and L. I. Agapova also took part in the work." Orig. art. has: 3 tables and 8 graphs.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

ACCESSION NR: AT4037645

S/2981/64/000/003/0036/0045

AUTHOR: Arbuzov, Yu. P.

TITLE: Properties of welded joints of aluminum alloys AD31 and AD33

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 36-45

TOPIC TAGS: aluminum alloy, alloy AD31, alloy AD33, alloy AK, alloy AMg3, alloy AMg6, heat hardenable aluminum alloy, malleable aluminum alloy, alloy weld joint, weld joint mechanical property, weld joint corrosion resistance, weld joint heat treating, prewelding alloy state, alloy cracking tendency, weld joint tensile strength, argon arc welding, aluminum welding, aluminum alloy welding

ABSTRACT: Samples of deformable and heat hardenable alloys AD31 and AD33 (Al-Mg-Si; composition and mechanical properties tabulated) were manually arc welded (argon), using welding rods made of AMg6, AMg3, AK and the respective alloys. Weld joints were tested for cracking tendencies, tensile strength, bend angle and corrosion resistance in relation to chemical composition and heat treatment prior to and after welding. Best results were obtained with a welding rod of AK material: the cracking factor was 10 - 20%, the tensile strength of the

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ACCESSION NR: AT4037645

reinforced weld after full heat treatment was not less than 90% of the original, and the joints showed good resistance to stress corrosion or uniform attack. Heat treatment before welding is significant; thus, the cracking factor dropped from 26 to 14% when AD33 is welded after annealing. Hardening and artificial aging improved the tensile strength of the joint by 14 - 15 kg/mm². The best properties prior to and after corrosive attack were shown by weld joints and materials subjected to full heat treatment. Multiple rewelding is also discussed. "I. N. Fridlyander, N. M. Edel'man, Ye. I. Burova, V. V. Solov'yeva, Z. I. Starostina and Ye. A. Gubareva also took part in the work." Orig. art. has: 11 graphs and 4 tables.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

ARBUZOVA, A. D.

FD 126

USSR/Medicine - Dysentery

Card 1/1

Authors : Semenova, M. A.; Pakidov, M. I.; Kaplan, A. S.; Arbuzova, A. D.; and Petrova, A. Ya.

Title : An experiment in the combined treatment of children suffering from chronic dysentery with colibacterin and Chernokhvostov's vaccine

Periodical : Zhur. mikrobiol. epid. i immun. 4, 29-30, Apr 1954

Abstract : Children in a nursery for children suffering from chronic dysentery were used to test the effectiveness of using Chernokhvostov's vaccine alone, or in combination with colibacterin. The results are given in percentages. No references are cited.

Institutions: Microbiology Division (Head - Prof. L. G. Peretts) of the Sverdlovsk Institute of Epidemiology, Microbiology and Hygiene (Director- G. F. Bogdanov) and the Childrens Sector of the Nizhne-Tagil'sk City Division of Public Health (City Pediatrician M. I. Pakidov)

Submitted : October 10, 1953

ARBUZOVA, A.D.

Case of cure of diabetes insipidus of tuberculous etiology in a child under one year old. Vop.okh.mat. i det. 4 no.4:91-92 J1-Ag '59.

(MIRA 12:12)

1. Iz Sverdlovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i detstva (dir. - R.A. Malysheva, rukovoditel' raboty - dotsent R.Ye. Leyenson).

(DIABETES)

(TUBERCULOSIS)

ARBUZOVA, A.D.

Treatment of acute leukemia in children. Vop. okh. mat. i det.
6 no.4:17-22 Ap '61. (MIRA 14:6)

1. Iz Sverdlovskogo nauchno-issledovatel'skogo instituta okhrany
materinstva i mladenchestva (dir. - kandidat meditsinskikh nauk
R.A.Malysheva, rukovoditel' pediatricheskogo otdela - dotsent
R.Ye. Leyenson).

(LEUKEMIA)

CHERNYSHEVA, L.I., doktor med. nauk; ARBUZOVA, A.D.

Pathomorphological changes in the adrenal glands during compound treatment of leukemia in children using steroid hormones (cortisone and prednisone) and ACTH. *Pediatrica* 41 no.10:38-43 O '62.
(MIRA 17:2)

1. Iz pediatricheskogo otdela (rukovoditel' - dotsent R.Ye. Leyenson) Sverdlovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i mladenchestva (dir. - kand. med. nauk R.A. Malysheva).

ARBUZOVA, A.L.

House-to-house sanitary services in the Stalinskii District of Rostov-on-Don. Gig. i san. 26 no.10:58-59 0 '61. (MIRA 15:5)

1. Glavnyy sanitarnyy vrach Stalinskogo rayona Rostova-na-Donu.
(ROSTOV-ON-DON---REFUSE AND REFUSE DISPOSAL)

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
<p>ARBUZOVA, I. A.</p> <p>Phosphinic acids containing an asymmetrical phosphorus atom. A. B. ARBUZOV AND IRINA A. ARBUZOVA. <i>J. Russ. Phys.-Chem. Soc.</i> 61, 1905-8(1920).—Phenylisobutylphosphinic acid and phenyltriphenylmethylphosphinic acid were synthesized, and unsuccessful attempts made to resolve them into optical isomerides by salt formation with alkaloids. <i>Phenylisobutylphosphinic acid</i>, m. 64.5°, was obtained by the action of iso BuI on the ester $\text{PPh}(\text{OC}_2\text{H}_5)_2$ at 100° in a sealed tube. It did not give crystallizable salts with alkalies or alkaloids. The ester $\text{PPh}(\text{OC}_2\text{H}_5)_2$ and Ph_2CHBr under similar conditions yielded <i>phenyltriphenylmethylphosphinic acid</i>, m. 287.8°, which gave cryst. salts with the alkali metals but not with alkaloids. B. C. A.</p>																			
<p>ADD-33 A METALLURGICAL LITERATURE CLASSIFICATION</p>																			

ARBUZOVA, I.A.

Reducing action of organic magnesium compounds. The action of cyclohexylmagnesium bromide and cyclohexylmagnesium iodide on benzophenone. A. K. Arbuzov and I. A. Arbuzova. *J. Gen. Chem. (U. S. S. R.)* 2, 388 (1932), cf. Tol. Stopyanov and Stenikova, preceding abstract. The results obtained by the action of interaction of org. Mg compds. with aldehydes and ketones are free radicals with trivalent C of the type of the metal ketyls of Schlenk (C. I. 5, 289; 8, 113, 1580; 22, 400). $RR'CO + XMgR \rightarrow RR'(XAlO)C \dots + R$. The product of interaction of Ph_2CO and $C_6H_{11}MgBr$ was redist. *in vacuo* and each fraction re-crystd., giving 30.7% Ph_2CO , m. 40°, 8.9% benzohydrol (III) m. 67-7.5°, 13.4% benzopinacol (II), m. 185-6°, and 9% cyclohexylidenediphenylmethane (IV), m. 84-5° (% is based on the amt. of Ph_2CO used in the reaction). The formation of these products can be explained by the scheme: $Ph_2CO + C_6H_{11}MgBr \rightarrow Ph_2C(OMgO)C \dots + C_6H_{11}$. The recovered Ph_2CO may be the result of oxidation with O_2 of the above ketyl and of some unchanged Ph_2CO . By addn. of C_6H_{11} to ketyl and decompn. with H_2O is produced an alc. which on distn. loses H_2O and gives IV: $Ph_2C(OMgO)C_6H_{11} + H_2O \rightarrow Ph_2C(OH)C_6H_{11} - H_2O \rightarrow Ph_2C=C_6H_{11}$. By the combination of 2 ketyl radicals and the action of H_2O is produced II. By the oxidation and reduction of C_6H_{11} and ketyl must be formed C_6H_{11} and benzohydrolate: $Ph_2C(OMgO)C \dots + C_6H_{11} \rightarrow Ph_2CH(OMgO)C_6H_{11} + C_6H_{11}$. The interaction of Ph_2CO and $C_6H_{11}MgI$ produced 18.9% Ph_2CO , 21.9% II, 7.7% dicyclohexyl (V), b. 96-7°, 1.26% diphenylcyclohexylcarbinol (VI), m. 71°, 5.1% IV, and 3.6% tetraphenyl-ethane (VII), m. 211-1.5°, and no III. Thus Ph_2CO with $C_6H_{11}MgI$ gives V and VII, not obtained with $C_6H_{11}MgBr$. The formation of V may be thus explained: Under the conditions used the intermediate C_6H_{11} and $Ph_2(OMgO)C \dots$ do not undergo the reaction of mutual oxidation and reduction as in the case of $C_6H_{11}MgBr$ but combine

thus: $2\text{Ph(OMg)C} \dots + 2\text{C}_6\text{H}_6 \longrightarrow \text{C}_6\text{H}_5\text{C}_6\text{H}_5 + \text{PhC(OMg)C(OMg)Ph}$
 which may explain the formation of much II and none of III. The formation of VI is
 difficult to explain; it must be caused by reduction, the required H_2 being probably split
 from C_6H_6 .
 CHAS. BLANC

ARBUZOVA, I. A.		(1) AND (2) SERIES		PROCESS AND PROPERTIES INDEX		(3) AND (4) SERIES	
BC						B-II-B	
<p>Composition of turpentine from fir scrap. I. A. ARBUZOVA (J. Appl. Chem. Russ., 1936, 8, 884-888).—The turpentine contains α-30, β-pinene 42, 1-limonene 8.9, phellandrene 16, and higher-b.p. fractions 1.1%. R. T.</p>							
ASS-51A METALLURGICAL LITERATURE CLASSIFICATION							
FROM SYNTHEZIS		FROM SYNTHEZIS		FROM SYNTHEZIS		FROM SYNTHEZIS	
FROM SYNTHEZIS		FROM SYNTHEZIS		FROM SYNTHEZIS		FROM SYNTHEZIS	

ARQUEVA, I. A.

10

Synthesis of 2-vinylnaphthalene. Yu. S. Zal'kind and I. A. Arbutova. *Plasticheskie Massy, Sbornik Statei* No. 3, 249-55 (1939); *Khim. Referat. Zhur.* 1940, No. 3, 90.— 2-Vinylnaphthalene (I) is synthesized by dehydrogenation of 2-ethylnaphthalene (II). II is produced according to the modified method of Marchetti, but in insignificant amounts. Better results were obtained by boiling a mixt. of naphthalene, polyethylated benzene and $AlCl_3$. This produced 55% of I (calcd. from the amt. of naphthalene used) which was identified by transforming it into the picrate. II was dehydrogenated by passing the vapors of II over catalysts consisting of a mixt. of Cr_2O_3 and MgO or of Al_2O_3 and ZnO . The reaction was carried out at a reduced pressure at 600-700° in an atm. of H_2 . The yield of I was approx. 40-2% of the wt. of II and approx. 53-5% of the wt. of the reaction product. Pure I was obtained by distn. Owing to slight polymerization only approx. 60% of the crude product was obtained. After recrystg. several times

pure I was obtained and identified by transforming it into the corresponding dibromide. By polymerizing I in the presence of H_2O a solid, transparent, slightly yellow polymer was obtained. Polymerization of the impure product gave the same results. References and patents for producing II and I and for polymerizing I are given.

W. R. Henn

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

ARBUZOVA, I. A.

Synthesis of polyvinylbutyral in a heterogeneous medium. *J. S. Zhukov, I. A. Arbuzova, and E. N. Rostovskii. J. Applied Chem. (USSR)* 19, 120 (1946).

Polyvinyl alc. (I) was prepd. by hydrolysis of a (1946). Polyvinyl alc. (I) was prepd. by hydrolysis of a 25% alc. soln. of the acetate with 10-13% H₂SO₄. The vinyl formate is readily hydrolyzed in aq. medium. The acetalization took place very readily in aq. medium by dissolving 1-2 g. I, with 1.01-1.72 g. HCO₂H as catalyst, and 0.54 mol. of HCHO in 10-27 vols. of water and heating to 40-60° 1-6.6 hrs.; 1.27-2.5 g. of polyvinylbutyral, with 74-90% substitution, were obtained. The resultant product was lumpy with the lower, and a fine white powder with the higher amt. of water. Lower temps. gave a product with a lower acetal content and less aldehyde, swelling in water and filtering with difficulty. Adding 1% H₂SO₄ to 1 g. I in 17-20 ml. water, 1.01 g. HCO₂H, and 0.35-0.62 g. HCHO gave 1.01-1.08 g. of a fine powder (representing 90.0-74% substitution) which became sticky on drying. Refluxing 2.5 g. I and 4.0-1.2% acid soln. for 4 hrs. in benzene yielded 0.1-0.6 g. H₂O; continuing for 4 hrs. longer in xylene gave an addnl. 0.42-1.1 g. H₂O. The authors postulate the formation of an anhydride, as the water collected corresponded to the theoretical amt. according to the reaction shown below; the presence of acid apparently accelerated it. Under the conditions of the reaction, I is a surface active agent and foams strongly; the reaction takes place on the surface, leading to the gradual transformation of the foam to a solid aggregate of the acetal, depending on the concn.

$$\begin{array}{c} \text{C} - \text{OH} \\ | \\ \text{CH}_2 \\ | \\ \text{C} - \text{OH} \end{array} \rightarrow \begin{array}{c} \text{C} \\ | \\ \text{CH}_2 \\ | \\ \text{C} \end{array} + \text{H}_2\text{O}$$

Boris Gutoff

1.1341 804109
67.137 004 004 101

1.1341 804109
67.137 004 004 101

CA ARBUZOVA I. B.

Vinyl ester of formic acid. S. N. Ushakov, I. A. ARBUZOVA, and B. N. Rostovskii. *Zhur. Priklad. Khim.* (J. Applied Chem.) 20, 1013-18 (1947).—Conditions have been worked out for the successful catalytic synthesis by $C_2H_5 + HCO_2H \rightarrow HCO_2C_2H_5$, with max. suppression of side reactions. Purified and dried C_2H_5 mixed with HCO_2H vapor in the ratio C_2H_5 15-17 mols. to HCO_2H 1 mol. was led over the catalyst with a time of contact of 3.0-3.5 sec. The catalyst is $(AcO)_2Zn$ or $(HCO_2)_2Zn$ on activated C of grain size 1-2 mm., granulometric d. 0.61, apparent d. 0.837, true d. 1.88 g./cc., porosity 65.5%, sp. surface area 350 sq. m./g. (by sorption of methylene blue). Under equal conditions, with 10% Zn salt in the catalyst, reaction between C_2H_5 and HCO_2H starts and proceeds at considerably lower temps. than the analogous reaction with $AcOH$; thus, 65, 75, 85, and 95% conversion of the acid were reached, with HCO_2H at about 102, 108, 173, and 184°, with $AcOH$ at 184, 189, 192, and 198°. The activity of the catalyst increases with increasing amt. of Zn salt, e.g., with HCO_2H , amt. of $(HCO_2)_2Zn$ in the catalyst 9.4, 16.7, and 20%, a degree of conversion of 80% was reached at about 173, 163, and 160°, of 90% at, resp., 178, 160, and 168°. Detns. of the amt. of ester in the condensate, with an 18% Zn salt catalyst, at 180-195°, contact time 3.0-3.5 sec., $C_2H_5:HCO_2H = 10:1$ (molar), gave, for runs of 19-24, 24-30, and 40-45 hrs., resp., yields of 57, 54.1, and 61.5% of $HCO_2C_2H_5$ passed, 74, 71, and 81% of HCO_2H spent. In addn. to $HCO_2C_2H_5$ and unreacted HCO_2H , the condensate contains about 5% AcH , evidently due to the side reaction $HCO_2C_2H_5 + HCO_2H \rightarrow 2CO + H_2O + AcH$.¹⁰

Polymerization of $HCO_2C_2H_5$ in a sealed tube in the presence of H_2O_2 , 1.5 hrs. at 80°, gave 90% of solid product insol. in $EtOH$, CH_2 , CCl_4 , and $EtOAc$, sol. in Me_2CO . The polymer formed on long standing, without heating and without H_2O_2 , was sol. in Me_2CO and $CHCl_3$, viscosity of a 0.2% soln. in Me_2CO 0.3527 centipoise, mol. wt. 71000. This polyvinyl formate is readily saponified in boiling H_2O (90% in 5.5 hrs.), the HCO_2H formed accelerating the reaction; pptn. with Me_2CO sep'd. the polyvinyl alc., white powder sol. in H_2O . The $HCO_2C_2H_5$ monomer is readily saponified with H_2O . This reaction can be utilized to strengthen dil. HCO_2H with AcH as a by-product. Thus, 25.6 g. of 90.9% $HCO_2C_2H_5$ (HCO_2H 1.6, AcH 7.5%), boiled with 50 g. HCO_2H (80.5%), gave 11.8 g. AcH and 63.8 g. residue, fractionated into b. 95-103, 100-103, and 103-105°, contg., resp., 81.7, 99.12, and 92.16% HCO_2H . N. Thoo

HRBUZOVA, I. A.
CA

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Copolymerization of allyl alcohol and its derivatives with sulfur dioxide. S. N. Ushakov, I. A. Arkhuzova, and V. N. Iltrenova. *Izvest. Akad. Nauk S.S.S.R., Otdel Khim. Nauk* 1949, 551-6. --Copolymerization of allyl alc. with SO_2 at $0-20^\circ$ in the presence of $0-0.2\%$ AgNO_3 in EtOH was investigated; the product, colorless amorphous solid after washing with Et_2O and EtOH contained 25.65-26.1% S; in a 48-hr. reaction with 1:2 molar ratio at 15° with 0.2% catalyst, the yield rises rapidly from 30% in 18 hrs. to over 80% in 30 hrs. and is almost 100% in 48 hrs.; the temp.-yield curve is linear; the effectiveness of the catalyst is displayed almost identically in $0.05-0.2\%$ concns., but lower amts. give sharply decreased yields; increase of SO_2 ratio to 6 gives a 97.8% yield, against 89.7% in a 9-day polymerization at 9° with 0.02% catalyst. The polysulfone products are unstable to hot aq. alkalis (even 2%), swell in water, and hydrolyze slowly on boiling; they are sol. only in pyridine and can be reprecipitated from solns. in strong mineral acids without change. Viscosities of 0.2% samples made with $0.003-0.04\%$ catalyst were closely grouped at 1.163-1.236 centipoises and essentially no fractionation was achieved by stepwise pptn. from sirupy H_3PO_4 by H_2O (as dil. H_3PO_4). Treatment of the product with paraformaldehyde ($0.73-1.0$ g. per 2 g. polymer) in concd. HCl at $35-40^\circ$ for 4 hrs. gave an amorphous ppt., after the gelation stage, which contained 70-2% formal group substitution; the products are insol. in all org. solvents and slowly dissolve in HCl with loss of CH_2O . Similar copolymerization of diallyl formal and diallyl acetal with SO_2 , with AgNO_3 catalyst (dissolved in allyl acetate) for 3 hrs. to 3 days (without catalyst), gave 38% copolymer with the formal and 43-49% polymer with the acetal when AgNO_3 was used (12% without catalyst in 3 days); the acetal formed the copolymer vigorously even at -15° , but the action slows down very rapidly; the products (empirical formula for the formal being $\text{C}_4\text{H}_8\text{S}_2\text{O}_4$ and for acetal $\text{C}_6\text{H}_{12}\text{S}_2\text{O}_4$) are insol. in org. solvents and are sol. slowly in HCl with aldehyde evolution. G. M. K.

ABRIZOVA, I.A.; PLOTKINA, S.A.; YFREMOVA, V.N.

Synthesis of alkylidene and arylidene glycol acrylates and methacrylates. Zhur.ob.khim. 26 no.4:1124-1127 Ap '56. (MLRA 9:8)

1. Institut vysokomolekulyarnykh soedineniy Akademii nauk SSSR.
(Acrylic acid) (Methacrylic acid)

ARBUZOVA I A
USSR/Organic Chemistry - Synthetic Organic Chemistry, E-2

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 845

Author: Arbuzova, I. A., Medvedeva, L. I., and Plotkina, S. A.

Institution: None

Title: On the Synthesis of Chlorophenyl Ethers of Methacrylic Acid

Original

Periodical: Zh. obshch. khimii, 1956, Vol 26, No 4, 1127-1130

Abstract: Chloro-substituted phenylic ethers of methacrylic acid have been synthesized, having the general formula $\text{CH}_2\text{CCH}_3\text{COOAr}$ (I), where Ar can be 2- ClC_6H_4 (Ia), 4- ClC_6H_4 (Ib), 2,4- $\text{Cl}_2\text{C}_6\text{H}_3$ (Ic), 2,4,6- $\text{Cl}_3\text{C}_6\text{H}_2$ (Id), $\text{Cl}_5\text{C}_6\text{H}$ (Ie) by a reaction analogous to that of ArOH (II) with $\text{CH}_2 = \text{CCH}_3\text{COCl}$ (III) or to the action of SOCl_2 on a mixture of ArOH and III. On heating in the presence of benzoyl peroxide, I gives transparent vitreous polymers. Procedure: to 25.7 gms of 2- $\text{ClC}_6\text{H}_4\text{OH}$ 23 gms of II are added slowly at 45° , following by heating to $70-80^\circ$ for 2.5 hours and distillation in a stream of N_2 ; Ia is obtained in yields of 89%, bp $98-99^\circ/3$ mm, n_D^{20} 1.5268, d_4^{20} 1.1739. The

Card 1/3

USSR/Organic Chemistry - Synthetic Organic Chemistry, E-2

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 845

Abstract: reaction with fused 4-ClC₆H₄OH is carried out in a similar manner (the reaction product is dissolved in ether and washed with 4% NaOH); the yield of Ib is 73.5%, bp 113-114°/6 mm, 93-94°/2 mm (distillation in the presence of Cu₂Cl₂), n_D^{20} 1.5292, d_4^{20} 1.1823. Similarly from 2,4-Cl₂C₆H₃OH (IV) and II, Ic is produced (heating for 3 hours at 90-92°, followed by distillation with Cu₂Cl₂); the yield is 82.7%, bp 133-133.5°/10 mm, mp 55-56° (from alcohol-benzene solution), n_D^{20} 1.5239, d_4^{20} 1.249. When 200.9 gms SOCl₂ are gradually added to 192.75 gms of 4-ClC₆H₄OH and 146 gms of III and heated (2.5 hours at 70°) until evolution of HCl is completed, followed by extraction with ether and washing with 10% Na₂CO₃, Ib is obtained in yields of 80%; after distillation in a stream of CO₂ with CuCl₂, the yield of 53%. When 54.4 gms of SOCl₂ are added to 81.5 gms IV and 45 gms of III and allowed to stand for 50 hours at 20°, followed by heating for 2 hours at 70°, after which the mixture is poured into 4% NaOH and the precipitate dissolved in ether, Ic is obtained after distillation of the ether; the yield is 77%. When 41.8 gms of SOCl₂ are added to 67.2 gms of 2,4,6-Cl₃C₆H₂OH (V) and 34.4 gms III at 35-40° and heated for 10 hours at 40-60°, Id is obtained in yields

Card 2/3

Chem 5/5

Arbuzova, I. A.

AUTHORS: Arbuzova, I. A., Medvedeva, L. I.

62-11-8/29

TITLE: On Polymerization of Chlorophenyl Ether of the Methacrylic Acid (O polimerizatsii khlorfenilovykh efirov metakrilovoy kisloty).

PERIODICAL: Izvestiya AN SSSR, Otdelenie Khimicheskikh Nauk, 1957, Nr 11, pp. 1349-1356 (USSR)

ABSTRACT: The paper deals with the investigation of the polymerization processes of phenylether of the methacrylic acid substituted by chlorine. It is demonstrated that the kinetics in the polymerization of parachloro-, 2,4-dichloro- and 2,4,6-trichlorophenylmethacrylates shows an analogous character to that of the polymerization of the methylmethacrylate: after an initial linear reaction period a sudden polymerization-acceleration occurs, which is accompanied by an increase of the molecular weight of the polymere. It is demonstrated that the influence of chlorine in the methylorylether-nucleus becomes manifest in a lower conversion degree and an earlier cessation of the self-accelerating phase when raising the quantity of chlorine. Furthermore it is shown that the substitution of the methyl group in the methacrylether by a

Card 1/3

On Polymerization of Chlorophenyl Ether of the Methacrylic
Acid.

62-11-8/29

more voluminous chlorophenyl group becomes manifest in the higher reaction velocity and the cessation of the polymerization with lower transformation degree. Based on the data obtained the following assumption on the causes for these phenomena is expressed: The comparison of the characteristic viscosities of the polymeres of the parachlorophenylmethacrylate permits to assume that the cause for the earlier cessation of the self-accelerating phase is the high viscosity of the reaction medium in the performance of the reaction with a smaller quantity of benzoyl-peroxide. In connection with the smaller mobility of the monomere, as compared with the methylmethacrylate, with voluminous chlorophenyl groups this leads to much more distinct difficulties in the diffusion of the monomere towards the growing end of the radical and therefore practically to a much earlier cessation of the self-accelerating phase. There are 6 figures, 5 tables, and 13 references, 4 of which are Slavic.

Card 2/3

On Polymerization of Chlorophenyl Ether of the
Methacrylic Acid.

62-11-8/29

ASSOCIATION: Institute for High - Molecular Compounds of the AN USSR
(Institut vysokomolekulyarnykh soyedineniy Akademii nauk
SSSR).

SUBMITTED: June 18, 1956.

AVAILABLE: Library of Congress

Card 3/3

ARBUZOVA, I. A.

ELLIOTT, and I. K. LIZAK (Inst. High Polymers, Leningrad) *Doklady Akad. Nauk S.S.S.R.* 112, 645-8(1967);
 cf. Arcus, C.A. 44, 8983g; Pinner, C.A. 47, 6174d; Feuer
 and Lynch, C.A. 49, 167a —CH₃CHCONH₂ (P. m. 8°)
 CH₃McCONH₂ (P. m. 10°)

79-28-5-33/69

AUTHORS: ~~Arbuzova, I. A., Ushakov, S. N., Plotkina, S. A., Yefremova, V. N., Ulezlo, I. K.~~

TITLE: On the Conversion Reactions of Methylolmetacrylamide (O reaktsiyakh prevrashcheniya metilolmetakrilamida)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol 28, Nr 5, pp. 1266 - 1269 (USSR)

ABSTRACT: In carrying out one of the experiments for the synthesis of methylolmetacrylamide according to Feuer, Lynch (Fayer i Linch) (Reference 1) the authors separated, besides this compound, also a product with the melting point $80.5 - 81.5^{\circ}\text{C}$ which, until now, has not been identified as dimetacrylamido-dimethylether. Many experiments to isolate this product from the mixture of final products of the above synthesis did not succeed, which also was the reason for investigating the conversion reaction of methylolmetacrylamide more in detail. The experiments to realize the dimetacrylamidodimethylether by conversion of the methylolmetacrylamide with benzoylchloride

Card 1/3

On the Conversion Reactions of Methylolmetacrylamide

79-28-5-33/69

in alkaline medium according to Zigeuner (Tsigcyner) (Reference 3) did not succeed. Being of the opinion that the ether would have to form a final product in the synthesis of methylenedimetacrylamide in the presence of acidous catalysts the behaviour of methylolmetacrylamide in the presence of acidous catalysts was investigated. On heating of the latter with a small amount of hydrochloric acid it could be converted into the dimetacrylamidodimethylether. In the case of increased concentration this ether was converted to the already known methylenedimetacrylamide (see reaction scheme). According to the data by Feyer and Lynch, the methylolmetacrylamide polymerizes on heating in the presence of mineral acids and boron chloride (BCl_3) with formation of unmeltable and insoluble polymers, which fact indicates a three-dimensional structure. The experiments carried out by the authors showed that the methylolmetacrylamide also polymerizes on the action of peroxide stimulators, in which case polymers of a line or three-dimensional structure can be obtained, depending on the prevailing conditions. In the case of irradiation of this amide with ultraviolet light

Card 2/3

On the Conversion Reactions of Methylolmetacrylamide

79-28-5-33/69

a solid unmeltable polymer results from it. In the masspolymerization in the presence of benzoylperoxide a vitreous polymer forms which is insoluble in water and usual organic solvents. There are 6 references, ^{none} of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute for High-Molecular Compounds, AS USSR)

SUBMITTED: April 29, 1957

Card 3/3

ARBUZOVA, I.A.; USHAKOV, S.N.; ROSTOVSKIY, Ye.N.

Reactant ratio in heterogeneous-contact synthesis of vinyl acetate.
Zhur.prikl.khim. 31 no.11:1704-1708 N '58. (MIRA 12:2)
(Vinyl acetate)

5.1190, 5.3300

75673
SOV/80-32-10-22/51

AUTHORS: Rostovskiy, Ye. N., Arbuzova, I. A.

TITLE: Concerning the Catalyst Concentration in Heterogeneous-Catalytic Synthesis of Vinyl Acetate

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2258-2261 (USSR)

ABSTRACT: This is Communication 4 on vapor phase vinyl acetate synthesis. The total porosity based on the apparent and real specific weight (this journal, 1959, Vol 32, p 2060), the catalytic activity, and the rate of the transformation of acetic acid were determined at various temperatures, and the corresponding curves plotted. The intersections of curves V and VI with I-IV define three zones: the increasing concentration of zinc acetate first causes a sharp decrease of the total porosity and of the sorption activity (zone a), then a slower decrease (zone b), and again a sharp decrease (zone c). In zones a and b the catalytic activity increases while the sorption activity decreases; in zone c the above values decrease

Card 1/3

Concerning the Catalyst Concentration
in Heterogeneous-Catalytic Synthesis
of Vinyl Acetate

75673
SOV/80-32-10-22/51

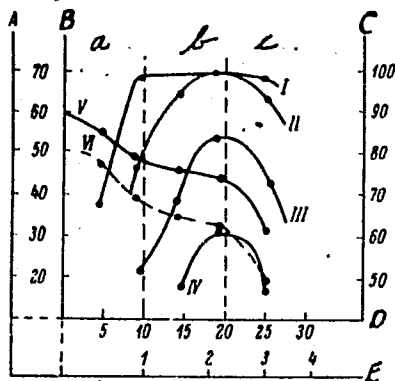


Fig. 3. Comparison of porosity, catalytic activity, and sorption activity of catalysts containing various amounts of zinc acetate. A, total porosity (curve V) of the catalyst (in %); B, activity (curve VI) based on sorption of chlorine (in %); C, conversion of acetic acid (in %); I, II, III and IV, catalytic activity at 200°, 190°, 180°, and 170°, respectively;

D, content of zinc acetate (in %) in the catalyst; E, number of zinc acetate molecules per 100 Å² of carbon surface.

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Concerning the Catalyst Concentration
in Heterogeneous-Catalytic Synthesis
of Vinyl Acetate

75673
SOV/80-32-10-22/51

concurrently. In zones a and b the catalytic activity and the catalyst amount are in direct ratio; in zone c, in inverse ratio. The presence of an optimum range of zinc acetate concentration in the carrier is explained, therefore, by the superimposition of two effects of the increase in concentration: (1) the increase of the catalytic activity, and (2) the decrease of the sorption and porosity of the catalyst due to the closing of the pores by the zinc salt crystals. There are 3 figures; and 16 references, 4 German, 12 Soviet.

SUBMITTED:

July 17, 1958

Card 3/3

<p>International symposium on macromolecular chemistry, Moscow, 1960. Weakman, J. J. <i>Macromolecular Chemistry</i>, Moscow, 1960, 14-18. Symposium on Macromolecular Chemistry, 1960. (International Symposium on Macromolecular Chemistry held in Moscow, June 14-18, 1960) Reports and printed. Section I. [Moscow, 14-18 June 1960, 1960] 266 p. 3,500 copies printed.</p>	
<p>Sponsoring Agency: The International Union of Pure and Applied Chemistry, Commission on Macromolecular Chemistry Tech. Ed.: T. V. Polyakova.</p>	
<p>PREFACE: This collection of articles is intended for chemists and researchers interested in macromolecular chemistry.</p>	
<p>CONTENTS: This is Section I of a multivolume work containing scientific papers on macromolecular chemistry in Moscow. The material includes data on the synthesis and properties of polymers, and on the processes of polymerization, copolymerization, polycondensation, and polymerization. Each text is presented in full or summarized in French, English, and Russian. There are 47 papers, 26 of which were presented by Soviet, Hungarian, and Russian macromolecular scientists. No personalities are mentioned. References accompany individual articles.</p>	
<p>Titkov, Ya. I., B. A. Polyakov, I. G. Zhuravskiy, B. E. Kozlovskiy, and I. B. Kuznetsov (USSR). The synthesis of 9,9'- and 10,10'-dioxo-2,2'-biphenyls and study of their structure and properties</p>	13
<p>Kozlovskiy, I. B., V. G. Gorbunov, Ya. I. Titkov, and I. B. Kuznetsov (USSR). Polymerization of substituted polyarylates</p>	47
<p>Kozlovskiy, I. B., I. G. Zhuravskiy, B. E. Kozlovskiy, and V. G. Gorbunov (USSR). The structure of hardened substituted polyarylates</p>	58
<p>Al'perman, Ya. M., A. Ya. Kuznetsov, and E. M. Zolotarev (USSR). Method of preparation of polyesters and their properties</p>	64
<p>Kozlovskiy, I. B., and A. S. Shcherbakov (Chechoslovakia). Analysis of cross-linked polymers</p>	72
<p>Kozlovskiy, I. B., V. G. Gorbunov, Ya. I. Titkov, and I. B. Kuznetsov (USSR). On the synthesis and properties of crystalline polymers of the type of poly-p-xylylene and polyphenylene</p>	90
<p>Kozlovskiy, I. B. (USSR). Crystalline polymerization and copolymerization of divinylacetylene</p>	101
<p>Kozlovskiy, I. B., A. I. Kuznetsov, A. V. Kozlovskiy, and B. A. Kozlovskiy (USSR). Synthesis of crystalline polyarylatepolyarylates</p>	118
<p>Kozlovskiy, I. B., and Ya. M. Al'perman (USSR). Polymerization of polyfunctional compounds</p>	125
<p>Kozlovskiy, I. B., M. D. Dvornik, E. A. Kozlovskiy, and M. Z. Zolotarev (USSR). Polymerization of vinylacetate in the presence of acylation and titanium chloride type catalysts</p>	131
<p>Kozlovskiy, I. B., S. L. Serdyuk, and V. P. Al'perman (USSR). On the preparation of the new types of linear polymers by the reaction of polymer combination</p>	141
<p>Kozlovskiy, I. B., A. V. Kozlovskiy, and S. G. Dvornik (USSR). The synthesis of crosslinking polymers on a complex catalyst (C₂H₅)₃ AlCl₃ containing polymers</p>	152
<p>Kozlovskiy, I. B., S. L. Serdyuk, and E. V. Kozlovskiy (USSR). Germanium-114 catalyzed polymerization</p>	156
<p>Kozlovskiy, I. B., S. L. Serdyuk, V. P. Al'perman, B. A. Kozlovskiy, and E. A. Kozlovskiy (USSR). On the synthesis of polymers</p>	160
<p>Kozlovskiy, I. B., S. L. Serdyuk, and V. P. Al'perman (USSR). The effect of chemical structure on the polymerization activity of the substituted polyethylene compounds</p>	167
<p>Kozlovskiy, I. B. (USSR). Cooperative processes in the polycondensation of biopolymers</p>	202

ARBUZOVA, I.A.; SULTANOV, K.

Polymerization of divinyl acetals. *Vysokom.soed.* 2 no.7:
1077-1081 J1 '60. (MIRA 13:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Acetals) (Polymerization)

53830

2209, 1274, 2109

S/190/60/002/009/022/023/XX
B004/B056

AUTHORS: Arbuzova, I. A., Kostikov, R. R., Propp, L. N.

TITLE: The Polymerization of Divinyl Benzal

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 9,
pp. 1402-1404

TEXT: I. A. Arbuzova, together with K. Sultanov has already carried out the polymerization of divinyl acetals (Ref. 4). It was the purpose of the present work to carry on with studying this reaction and producing a new group of 1,6-dien-monomers, which polymerize under ring closure. The authors proceeded from divinyl benzal. They synthesized the di- β -chloroethylbenzal by heating ethylene chlorohydrin by means of benzaldehyde in benzene in the presence of HCl as a catalyst. By reaction of the di- β -chloroethylbenzal with dry KOH, they obtained the divinylbenzal. The polymerization of this compound was carried out in the presence of tert-butyl peroxide of azo-isobutyric acid-dinitril and irradiation by means of a ПРК-2 (PRK-2) mercury lamp at temperatures of between 20 and 145°C. The reaction lasted 20 to 240 hours. White powders, which were soluble in benzene,

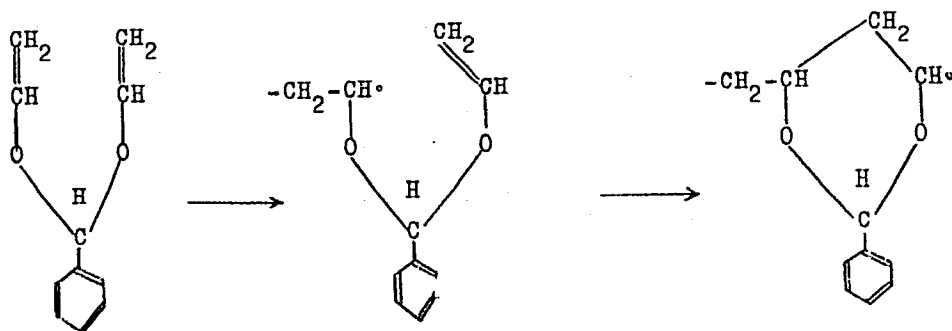
Card 1/3

85752

The Polymerization of Divinyl Benzal

S/190/60/002/009/022/023/XX
B004/B056

chloroform, dioxane, pyridine, and dimethylformamide were obtained. The molecular weight determined cryoscopically was between 1280 and 3550. By means of the bromine-bromate method, the number of the remaining double bonds was found to be 3-5%. As the physical properties exclude a three-dimensional structure, the authors assume ring closure according to the following scheme:



Card 2/3

The Polymerization of Divinyl Benzal

S/190/60/002/009/022/023/XX
B004/B056

There are 2 tables and 4 references: 1 Soviet and 5 US.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: April 10, 1960

Card 3/3

87341
S/190/60/002/010/025/026/XX
B004/B064

15.8109
AUTHORS:

Arbuzova, I. A., Yefremova, V. N.

TITLE:

Production of Linear Polymers of the Glycidyl Esters of Unsaturated Acids by the Mechanism of Cyclic Polymerization

PERIODICAL:

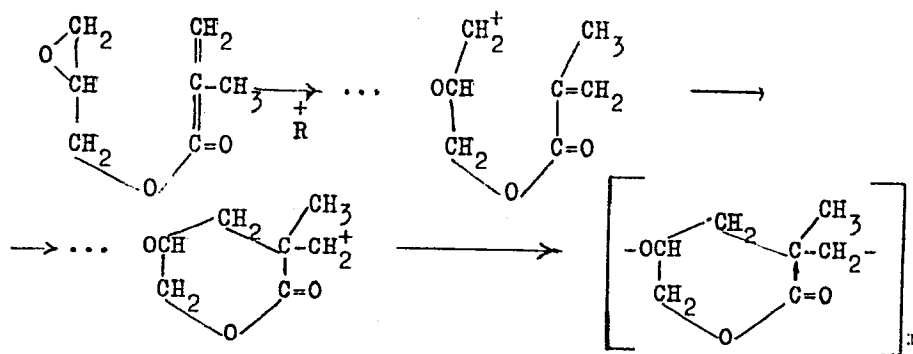
Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1586-1587

TEXT: In this letter to the editors the authors state that they succeeded in polymerizing glycidyl esters of unsaturated acids, containing, apart from the double bond, also a glycide group which is capable of polymerizing if the Δ -oxide cycle is opened. When polymerizing glycidyl methacrylate in the presence of BF_3 alcoholate and hydroquinone, a linear polymer, soluble in alcohol, dioxan, and acetone was obtained which contains no glycide group. The intrinsic viscosity of the polymer was 0.057, the molecular weight 818. Glycidyl acrylate was polymerized in a similar way. The formation of a linear cyclic polymer is assumed as reaction scheme:

Card 1/2

Production of Linear Polymers of the Glycidyl
Esters of Unsaturated Acids by the Mechanism
of Cyclic Polymerization

87341
S/190/60/002/010/025/026/XX
B004/B064



There are 4 references: 2 Soviet and 2 US.

SUBMITTED: July 5, 1960

Card 2/2

86325

15.8105

2209

S/190/60/002/012/012/019
B017/B078

AUTHORS: Arbuzova, I. A., Yefremova, V. N., Yelisseyeva, A. G.

TITLE: Synthesis and Properties of Methylmethacrylate
Dimethacrylamidodimethyl Ether Copolymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 12,
pp. 1828 - 1831

TEXT: Copolymers of methylmethacrylate with dimethacrylamidodimethyl ether were synthesized and their mechanical properties examined. A detailed description in the experimental part explains the synthesis of these copolymers. The effect of the content of dimethacrylamidodimethyl ether in copolymers containing methylmethacrylate on tensile strength, elongation, specific viscosity, and modulus of elasticity at 20°C has been studied. Results show that the tensile strength of copolymers increases when adding 4-5 mole% dimethacrylamidodimethyl ether. If this amount is further increased, a sharp decrease in strength occurs. Viscosity first increases with an addition of dimethacrylamidodimethyl ether, reaches a maximum, and declines again with a further addition, while the

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86325

Synthesis and Properties of Methylmethacrylate S/190/60/002/012/012/019
Dimethacrylamidodimethyl Ether Copolymers B017/B078

modulus of elasticity remains unaffected. Fig.2 shows the vitrification temperature of polymethylmethacrylate copolymers with decamethylglycol-dimethacrylate, ethylbutylpropanenedioldimethacrylate, allylmethacrylate, and dimethylpropanenedioldimethacrylate according to data by S. Loshaek (Ref.2), B. N. Rutovskiy and A. M. Shvr (Ref.5), and with dimethacrylamidodimethyl ether as a function of the components of copolymerization. Results show that the vitrification temperature of these copolymers increases with a diolefin content of up to 5%. The vitrification temperature was determined according to A. I. Marey (Ref.11). Professor Ye. V. Kuvshinskiy is thanked for measurements made in his laboratory. There are 2 figures and 11 references: 4 Soviet, 4 US, 1 British, and 2 German. X

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds of the Academy of Sciences USSR)

SUBMITTED: May 23, 1960

Card 2/2

20215

18 7500

S/126/61/011/002/014/025
E193/E483

AUTHORS: Arbuzova, I.A., Kurdyumov, G.V. and Khandros, L.G.

TITLE: Growth of Elastic Crystals of the Martensitic γ' -Phase
Under the Action of Applied Stress

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.2,
pp.272-280

TEXT: When a martensitic transformation takes place in an alloy, considerable stresses of either side are set up in the matrix by the first-to-form martensite grains. In some regions these internal stresses may bring about nucleation and growth of new martensite grains, in others they may have an opposite effect. The object of the investigation, described in the present paper, was to establish whether the same effect can be produced by externally applied stresses. The experiments were carried out on a Cu-base alloy, containing 14.44 wt.% Al and 4.75 wt.% Ni, in which the martensitic transformation $\beta_1 \rightarrow \gamma'$ begins at app 30°C. To facilitate visual examination of the relief patterns, the experimental specimens (measuring 0.7 x 2.5 x 12 mm), preliminarily quenched from 900°C, were heated to 70°C and polished at this temperature. After cooling to room temperature, several martensite

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20215

S/126/61/011/002/014/025

E193/E483

Growth of Elastic ...

needles appeared on the specimen surface but the bulk of the alloy remained untransformed. The effect of the application of external stress was studied with the aid of a specially designed apparatus, schematically illustrated in Fig.1. The apparatus consists of a vacuum chamber (4) which incorporates a rod (5), mounted on bellows and used to heat or cool the test piece (7), and a pair of grips (6) for fastening the test piece. (The temperature of the rod is changed with the aid of a thermos flask, containing a hot liquid or liquid nitrogen.) One of the grips is rigidly attached to the body of the vacuum chamber, the other being joined to a connecting rod which enters the vacuum chamber through an opening, provided with a rubber seal. A dial gauge indicator (8) for measuring the strain is rigidly attached to the vacuum chamber, its plunger pressing against a regulating spring, attached to the connecting rod, the latter being joined to a ring dynamometer (11). Stress is applied by turning the handle (9) and its magnitude is shown on an indicator (12), calibrated in kg/mm^2 . The vacuum chamber is closed by a lid (13), provided with a window (14) through which the test piece can be observed through a microscope (2), or photographed with the aid of a photo-camera (1). In one Card 2/6

20215

Growth of Elastic ...

S/126/61/011/002/014/025
E193/E483

series of experiments, a test piece was subjected to tensile or compressive stresses and the resultant movement of the phase boundaries was studied directly by visual examination of the polished specimen surface. In other experiments, the test pieces were cooled from above the martensitic transformation temperature and the resultant variation of the relative quantities of the β_1 and γ' phases was assessed. The results indicated that growth, or a decrease in size, of a martensitic phase crystal can be caused either by the variation of temperature or by the application of external stress. Although the growth of a martensitic crystal can be induced by both tensile and compressive stresses, it is only the favourably oriented grains that increase in size in either case. When the direction of the applied stress is changed, crystals with a certain orientation of the habit planes disappear and grains with a different orientation are formed in their place. The movement of the phase boundaries takes place both on the application and on removal of the external load. When, however, martensitic grains are formed under conditions such that only one boundary intersects a whole single crystal, no movement of the boundary takes place on removal of the applied load. The behaviour of crystals with a

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20215

Growth of Elastic ...

S/126/61/011/002/014/025
E193/E483

single boundary under the action of applied stress is similar to that induced by temperature variation and can be compared to the behaviour of elastic twins, intersecting a single crystal. There are 4 figures and 6 Soviet references.

ASSOCIATION: Institut metallofiziki AN UkrSSR
(Institute of Physics of Metals AS UkrSSR)

SUBMITTED: June 2, 1960

Card 4/3/

15.8070

27505

S/079/61/031/009/006/012
D215/D306

AUTHORS: Arbuzova, I.A., and Mosevich, I.K.

TITLE: Synthesis and transformations of methylolamides of unsaturated acids

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 9, 1961,
3023 - 3025

TEXT: In earlier investigations Arbuzova, Ushakov, Plotkina, Efremova and Ulezlo (Ref. 1: Zh. O. Kh. 28, 1266, 1958) established that heating methylolmethacrylamide in the presence of HCl gives rise to dimethacrylamidodimethyl ether which copolymerizes to give cross-linked copolymers. It was, therefore, of interest to study transformations of other methylolamide derivatives of e.g. acrylic or substituted acrylic acids. The authors were able to prepare diacrylamidodimethyl ether $(CH_2=CHCONHCH_2)_2O$ by heating methylolacrylamide in the presence of an acid catalyst. The compound is a crystalline solid m.pt. 125-126°C, soluble in water and

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Synthesis and transformations of ...

27505
S/079/61/031/009/006/012
D215/D306

easily polymerized. A similar method was used to prepare the acrylamide, methylol- β,β -dimethylacrylamide, by reacting the amide of β,β -dimethylacrylic acid with paraformaldehyde. The compound melts at $81-82^{\circ}\text{C}$, is soluble in benzene and ethyl acetate and does not polymerize in the presence of free radical initiators and ionic catalysts. Heating with an acid catalyst results in the formation of methylene-bis- β,β -dimethylacrylamide m.pt. $1735-1745^{\circ}\text{C}$. Methylolacrylamide was prepared according to the Feuer and Lynch method. β,β -dimethylacrylamide was obtained by reacting the acid chloride with ammonia. Diacrylamidodimethyl ether, $\text{C}_8\text{H}_{12}\text{O}_3\text{N}_2$, m.pt. $125.5-126^{\circ}\text{C}$ was prepared by heating 0.1 g mol of the amide in CCl_4 with 0.1 ml HCl for 30 min. Heating the amide with paraformaldehyde in the presence of sodium ethoxide gave methylol β,β -dimethylacrylamide, which on heating at 60°C with HCl gave methylene-bis- β,β -dimethylacrylamide. There are 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Fuer, U. Lynch, J. Am. Chem. Soc. 75, 5027,

Card 2/3

Synthesis and transformations of ...
1953.

27505

S/079/61/031/009/006/012
D215/D306

ASSOCIATION: Instytut vysokomolekulyarnykh soyedineniy Akademii
nauk SSSR (Highmolecular Compounds Institute, Academy
of Sciences, USSR)

SUBMITTED: October 17, 1960

Card 3/3

ARBUZOVA, I.A.; KHANDROS, L.G.

Existence of martensite crystal formation centers above the
point of metastable equilibrium. Sbor. nauch. rab. Inst.
metallofiz. AN URSR no.14:147-151 '62. (MIRA 15:6)
(Phase rule and equilibrium) (Alloys--Metallography)

44280

S/601/62/000/015/005/010
A004/A127

1.1600
AUTHOR:

Arbuzova, I.A.

TITLE:

Determining the structure and dispersity of nickel-chromium powder obtained by the electrolytic method

SOURCE:

Akademiya nauk Ukrayins'koyi RSR. Instytut metalofyzyky. Sbornik nauchnykh rabot. no. 15. Kiev, 1962. Voprosy fiziki metallov i metallovedeniya, 142 - 146

TEXT:

The author gives a survey on the properties of highly dispersive metal powders containing nickel and chromium that were obtained electrolytically by E.M. Natanson and N.N. Kazachok of the Institut obshchey i neorganicheskoy khimii (Institute of General and Inorganic Chemistry) IONKh of the Academy of Sciences UkrSSR. A detailed description is given of the powder structure and the degree of dispersity of the powder. The x-ray photos were taken in a Debye chamber in copper, manganese and chromium radiation. The test specimens had a face-centered lattice. The chemical analysis data and the powder production conditions as well as the angles of reflection of the alloys are given in a number of

Card 1/2

38203

S/190/62/004/006/009/026
B101/B110

AUTHORS: Arbuzova, I. A., Plotkina, S. A., Sokolova, O. V.

TITLE: Synthesis of linear polymers of the monoallyl esters of unsaturated acids by cyclic polymerization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 6, 1962, 843-847

TEXT: With a view to the production of new, thermally stable substances the bulk polymerization of monoallyl maleinate (I) and monoallyl citraconate (II) with benzoyl peroxide (BP) as a catalyst was investigated. Results: (1) In the case of (I), the conversion increased with increasing content of BP (4.86% conversion with 0.5% BP, 40.0% conversion with 2% BP), while the intrinsic viscosity dropped (0.187 with 0.5% BP, 0.148 with 2% BP). (2) The conversion of (I) increased with increasing temperature, whilst more and more of the insoluble polymer with three-dimensional network was formed: thus 19% of insoluble polymer was obtained at 60°C with 48% conversion, 86% of it at 80°C with 80% conversion. To obtain linear polymers, soluble in organic solvents, work was done also at 60°C

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and with up to 40% conversion. (3) The polymerization of (II) did not yield insoluble polymers, even at 100-130°C. (4) The intrinsic viscosity, the molecular weight, the percentage of insaturation of alcohol and acid radicals, and the percentage of cyclization were determined for the polymers. In this order, the values for the polymer of (I) are: 0.148; 15,000; 22.3; 14.7; 63; for the polymer of (II): 0.24, 47,800; 22.3; 13.7; 64. The polymerization occurs mainly under the action of acyl radicals. There are 2 figures and 4 tables. The most important English-language references are: G. B. Butler, R. J. Angelo, J. Amer. Chem. Soc., 79, 3128, 1957; T. Holt, W. Simpson, Proc. Roy. Soc., London, 238, 1213, 154, 1956.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds AS USSR)

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Cyclic polymerization of glycidol esters of unsaturated
acids in the presence of ionic catalysts. Vysokom. soed. 5
no.12:1819-1823 D '63. (MIRA 17:1)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

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AUTHOR: Arbuzova, I. A.; Khandros, L. G.

TITLE: Abnormal expansion and decrease of plastic deformation resistance during a martensite conversion in a copper-aluminum-nickel alloy

SOURCE: Fizika metallov, i metallovedeniye, vol. 17, no. 3, 1964, 390-399

TOPIC TAGS: copper base alloy, aluminum containing alloy, nickel containing alloy, martensite conversion, plastic deformation, abnormal expansion, abnormal decrease

ABSTRACT: The authors investigate the dependence of deformation on the stress within the temperature range of a martensite conversion in a copper-aluminum-nickel alloy. Abnormal expansion and increase in the extent of yield, observed within this temperature range, is explained by the primarily directed cooperative transfer of atoms during a rearrangement of the lattice. A diagram of the installation used in the experiment as well as graphs of the dependence of deformation on stress are given. Abnormally large expansion is observed in the copper-aluminum-nickel alloy within the martensite conversion temperature range due to a stretching load effect. Removal of the load does not restore the initial dimensions of the sample. These can be obtained by supplementary heating above the temperature of reversible

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